

**CLAIMS**

What is claimed is:

- 1 1. A computer-implemented method for extending functionality of a first set of  
2 classes and methods in an application hosted by a computing arrangement, comprising:  
3 establishing a mapping of original class names of classes in the first set to  
4 corresponding substitute class names of classes in a second set, wherein the classes in the  
5 second set change the functionality of the classes in the first set;  
6 in response to loading a class file of a class in the first set, replacing in the class  
7 file original class names with corresponding substitute class names; and  
8 instantiating classes referenced by the substitute class names in lieu of classes  
9 referenced by the original class names.
- 1 2. The method of claim 1, further comprising:  
2 establishing a mapping of original method names of the first set to corresponding  
3 substitute method names of methods in a second set, wherein the methods in the second  
4 set change the functionality of the methods in the first set;  
5 in response to loading a class file of a class in the first set, replacing in the class  
6 file original methods names with corresponding substitute method names; and  
7 invoking methods referenced by the substitute method names in lieu of methods  
8 referenced by the original method names.
- 1 3. The method of claim 2, further comprising caching on the computing system the  
2 class file having the substitute class names and substitute method names.
- 1 4. The method of claim 3, further comprising replacing the original class names with  
2 the substitute class names in a constant pool within the class file, and changing in the class  
3 file method invocation bytecodes from references to original methods to references to  
4 substitute methods.
- 1 5. The method of claim 4, wherein the classes in the first set are selected ones of  
2 standard Java API classes, and the classes in the second set change the functionality of the  
3 selected ones of the standard Java API classes.

1 6. The method of claim 5, wherein the selected ones of the standard Java API classes  
2 include selected input and output Java API classes.

1 7. The method of claim 1, further comprising caching on the computing system the  
2 class file having the substitute class names and substitute method names.

1 8. An apparatus for extending functionality of a first set of classes and methods in an  
2 application hosted by a computing arrangement, comprising:

3 means for establishing a mapping of original class names of classes in the first set  
4 to corresponding substitute class names of classes in a second set, wherein the classes in  
5 the second set change the functionality of the classes in the first set;

6 means, responsive to loading a class file of a class in the first set, for replacing in  
7 the class file original class names with corresponding substitute class names; and

8 means for instantiating classes referenced by the substitute class names in lieu of  
9 classes referenced by the original class names.

1 9. A computing arrangement for extending functionality of a first set of classes and  
2 methods in an application program, comprising:

3 a second set of classes configured to change the functionality of the classes in the  
4 first set;

5 a mapping of original class names of classes in the first set to corresponding  
6 substitute class names of classes in the second set;

7 a virtual machine configured to host execution of the application program;

8 a class loader coupled to the virtual machine and responsive to a request from the  
9 virtual machine to load a class file of a class in the first set, the class loader configured to  
10 replace in class file original class names with corresponding substitute class names,  
11 whereby the virtual machine instantiates classes referenced by the substitute class names  
12 in lieu of classes referenced by the original class names.

1 10. The arrangement of claim 9, further comprising:

2 wherein the second set of classes includes methods configured to change the  
3 functionality of the methods in the first set;

4           wherein the mapping includes original method names of methods in the first set  
5 mapped to corresponding substitute method names of methods in the second set; and  
6           the class loader is further configured to replace in class file original method names  
7 with corresponding substitute method names, whereby the virtual machine invokes  
8 methods referenced by the substitute method names in lieu of methods referenced by the  
9 original method names.

1   11.    The arrangement of claim 10, further comprising a class cache coupled to the class  
2 loader and to the virtual machine for cache storage of the class file.

1   12.    The arrangement of claim 11, wherein the class loader is further configured to  
2 replace the original class names with the substitute class names in a constant pool within  
3 the class file, and change in the class file method invocation bytecodes from references to  
4 original methods to references to substitute methods.

1   13.    The arrangement of claim 12, wherein the classes in the first set are selected ones  
2 of standard Java API classes, and the classes in the second set change the functionality of  
3 the selected ones of the standard Java API classes.

1   14.    The arrangement of claim 13, wherein the selected ones of the standard Java API  
2 classes include selected input and output Java API classes.

1   15.    The arrangement of claim 9, further comprising a class cache coupled to the class  
2 loader and to the virtual machine for cache storage of the class file.